

20 Dec 2005

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/11987

### A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : F16J 15/02  
US CL : 277/309, 549, 551, 562, 571, 572, 573, 576, 577

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 277/309, 549, 551, 562, 571, 572, 573, 576, 577

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,448,426 A (Jackowski et al) 15 May 1984 (15.05.1984), See entire document.	1-6
X	US 4,428,586 A (Romero) 31 January 1984 (31.01.1984), See entire document	1-6
X	US 3,135,518 A (Carson et al) 02 June 1964 (02.06.1964), See entire document	1-5
X	US 4,327,922 A (Walther) 04 May 1982 (04.05.1982), See entire document	1-6
A	US 4,856,794 A (Boyers et al) 15 August 1989 (15.08.1989), Entire document.	1-6
A	US 5,096,207 A (Seeh et al) 17 March 1992 (17.03.1992), Entire document.	1-6
A	US 5,201,529 A (Heinzen) 13 April 1993 (13.04.1993), Entire document.	1-6
A	US 5,269,536 A (Matsushima et al) 14 December 1993 (14.12.1993), Entire document.	1-6
A	US 6,083,109 A (Gerulski) 04 July 2000 (04.07.2000), Entire document.	1-6

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
"*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"O"	document referring to an oral disclosure, use, exhibition or other means		
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Date of the actual completion of the international search  05 May 2005 (05.05.2005)	Date of mailing of the international search report  23 NOV 2005
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer <i>Vishal Patel</i> Telephone No. 571-272-7060